PSYC202

Research Design

Agenda

- A few new statistical techniques
  - One-way ANOVA, repeated measures ANOVA
- Research design

Group differences
Simplest case: t-tests

- Comparing two groups
- Nominal IV
- Interval ratio DV
- t-distributions
  - One sample t-test
  - Independent t-test
  - Dependent t-test

t-tests
two groups/two conditions

- One sample t-test
  - One sample compared to known μ
- Independent sample t-test
  - Compare two independent groups
  - Between subjects
- Paired sample t-test
  - Compare two dependent groups
  - Within subjects

F-tests (ANOVA)

- More than two groups or more than one independent variable:
  - Analysis of Variance (ANOVA)
  - $F(d,f)$ = test statistic, $p < .05$

F-tests (con't.)

- One IV, more than two levels
  - One-way ANOVA, (remember post-hoc test)
- Two or more IV's, between-subject
  - Univariate ANOVA (Factorial ANOVA)
- Two or more IV's, at least one IV within-subject
  - Repeated measures ANOVA
  - Ex: measure effect at three different time points

Think, pair, share

- Design a study to test the hypothesis:
  - L'DOPA is better than both antidepressants and placebo for Parkinson's symptoms.
  - Include:
    - Sample type and participant recruitment
    - Procedure and methodology
    - IVs, DVs
    - Statistical analyses used
    - Potential confounds in your design

Note: If you don't know how to measure something, Google it! Look at past research.

Think, pair, share

- Design a study to test the hypothesis:
  - Attention both enhances what you pay attention to and inhibits what you ignore. You should be faster to respond to something you pay attention to and slower to respond to something you ignore compared to baseline (not told to attend to anything in particular).
  - Include:
    - Sample type and participant recruitment
    - Procedure and methodology
    - IVs, DVs
    - Statistical analyses used
    - Potential confounds in your design

Note: If you don't know how to measure something, Google it! Look at past research.

Think, pair, share

- Design a study to test the hypothesis:
  - Whether or not a passenger train arrives on time depends on the mood of the passengers and how calm the train driver remains while driving.

    (hint: interaction?)

  - Include:
    - Sample type and participant recruitment
    - Procedure and methodology
    - IVs, DVs
    - Statistical analyses used
    - Potential confounds in your design

Note: If you don't know how to measure something, Google it! Look at past research.